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FOOD AND POPULATION

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The definitive guideline for this Symposium appears to be "to develop proposals for continuing activities by the international non-governmental (S&T) communities in support of sustainable world development".

It was intended that this discussion paper would take the form of a selective synthesis of proposals and recommendations from the various background papers submitted to the Symposium organizers. Unfortunately, by the time of the deadline for delivery, very few background papers had been received. Consequently, many no doubt stimulating, constructive and thoughtful proposals and recommendations will arrive too late for inclusion and will therefore be raised verbally during the discussions in Singapore.

The range, diversity and complexity of the problems relative to the world food vs. population equation staggers the imagination. The many that seek solutions through scientific and technical research, are complicated and constrained by a formidable array of political, social, economic and ethical considerations, many of which are specific to particular regions, nations or communities within nations.

A question of primary importance to be addressed by this Symposium is 'by what means can the immense array of talent, scholarship, knowledge, experience and collective wisdom dispersed

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among the non-government organizations represented be harnessed to the task of ensuring and maintaining a satisfactory balance between food and population?'. .

Is it sufficient that we offer what we have to existing agencies, or is there a need for new corporate and institutional mechanisms through which we can channel our resources?

The existing agencies who in one way or another address the international food and/or population question are too numerous to mention and fall into several overlapping categories:

- A. Multilateral bodies including the UN agencies, affiliates and special funds, the international and regional development banks, various consortia of, for example, oil-rich nations, the Consultative Group on International Agricultural Research (CGIAR), the World Food Council, the International Fund for Agricultural Development, and many others;
- B. Bilateral national government programs of economic and technical assistance; and
- C. Non-government organizations including private foundations that support research and development in public health, family planning, demography, agriculture, food, nutrition, economic and social welfare.

Many of the multilateral and most of the government controlled bilateral agencies are subject to various degrees and forms of political pressure, both in terms of the programs they pursue and the people they employ. Rare indeed are those donors whose contributions are entirely free from some measure of self-interest.

Given the dominance of politically motivated people in all national and most international agencies, is there a need for an international apolitical body to examine and pass judgement upon existing international programs of science and technology related to food and population? If so, by what mechanism might such a body be financed and operated? Are there existing organizations which, if strengthened, expanded or modified, could fulfill such a role, drawing upon the many talents represented among the non-government organizations participating here?

Or, recognizing that advice unsupported by significant political power or economic influence may well go unheeded, will more be achieved by working within and/or in coordination with existing multilateral and bilateral agencies?

Though scientific and technological capability varies widely, an inadequate competence in the management of science and technology is apparent among many developing countries. The International Union of Food Science and Technology (IUFOST) has questioned the suitability of the traditional patterns of university

education for future directors and managers of national and international food and agricultural research programs. Many young directors of applied research in developing countries are required to make program selections, to design research facilities and to decide upon resource allocations with little more than a highly specialized research degree to sustain them.

In one background paper it is suggested that "science is too important to be left entirely to the scientist". Is this because scientists tend to review their responsibilities and achievements from too narrow a perspective? Do they incline to pass judgement more upon the basis of technical ingenuity than upon social usefulness? Is this Symposium, or a working group sponsored by it, able to prescribe a pattern of training that would convert good scientists into competent managers of science and technology?

Is there a need for a new international institute of research and technology management, an institute that would address social and economic issues that relate to research management and technological development? Alternatively, would it prove more effective to strengthen and expand such existing regional institutions as the Asian Institute of Management, and the South East Asian Regional Centre for Graduate Study and Research in Agriculture (SEARCA)?

There is a growing recognition that scientists and technologists must devote more attention to the social and economic implications and consequences of their research. If, indeed, science is too important to be left entirely to scientists, it is equally true to say that science and technology are too important to be left entirely to politicians. Is it therefore desirable that scientists become more politically sensitive?

Several background papers urge the need to devote greater attention to improving traditional technologies through systematic study and scientific research. It is pointed out that technologies by which food is produced, processed and preserved existed long before food and agricultural scientists became active. It is argued that scientists, including social scientists, pay too little attention to the needs, demands and attitudes of the consumers and users of the products of scientific innovation.

By what means can scientists and technologists be helped to realize that applied research, particularly in the fields of food, population and health, must be directed to the satisfaction of the human need; and that the need must be defined and pursued in close cooperation with those whose need is to be satisfied? The CGIAR supports a series of international agricultural research centres each of which employs an international staff dedicated to increasing food crop production in developing countries. Significant progress has been made by these centres toward the improvement of such neglected traditional crops as rice, sorghum, cassava and various

food legumes. These centres have established useful cooperative activities with many universities in both developed and developing countries.

The need, now widely recognized, is to strengthen the national agricultural research capabilities of LDCs, to enable them to adapt and establish among thousands of small-holder farmers these more productive technologies from the international centres. This requires not only the building of research institutions and mechanisms for divulgation to farmers, but the training and formation of many food and agricultural research managers.

Research to increase food production continues to receive greater attention than post-harvest systems, the sequence that begins with the harvest and ends with the consumer. It is essential that more research be applied to the technical, economic and social factors that influence post-harvest systems.

Of all the subjects before us, none is subject to more controversy than population control. There are those who argue there is too little research investment by responsible international agencies into the control of human reproduction. At the same time, though seemingly irreconcilable, the conflicting attitudes towards the ethical, social and political, not to mention religious, issues cannot be ignored by scientists who see the ultimate goal as foolproof inexpensive contraceptive devices.

It is clear that during the time span of the Singapore Symposium one could do little more than catalogue the inventory of problems relevant to the science and technology of food and population. Perhaps, therefore, as an alternative to attempting to prescribe programs of scientific research and technological enquiry, it would be more profitable to decide how best the non-government organizations represented can unite and apply their resources to improving the physiological, social and economic well being of the least privileged people of the world. The strengths of the organizations represented lie in their unparalleled reservoir of knowledge and experience, in their comparative freedom from political domination, and their ability in considerable measure to transcend political, racial and social boundaries.

Is there need for a new organization, or at least a new permanent secretariat, through which to channel and coordinate the many resources represented among these non-government organizations? Is there an existing international body, free from undue political constraints, which might be adapted to the purpose? If so, by what means might it be liberally financed and directed?

The Symposium offers a unique opportunity to enable the world's scientists and technologists whatever their disciplines, to exert a greater influence upon and make a more comprehensive contribution to the establishment of a rational and equitable world order and in particular to ensuring an adequate food supply for all mankind.

In conclusion, the following are a few specific recommendations culled from the few background papers received:

1. The international science community should strive to understand the complex problems of development so that:
  - (a) they can bring to the early attention of those in authority new scientific discoveries and technological possibilities which might assist in the development process;
  - (b) they can assist in the redefining of training programs both managerial and technical;
  - (c) they can participate in the implementation of development plans;
  - (d) they can examine critically the relevance and quality of international development programs in science and technology
2. The international science community should explore the means of setting up an international advisory service for research and training institutions and organizations in DCs and LDCs. The advisory service should focus on matters relating to research management and program evaluation.
3. Similarly, there is a need to set up an international industrial advisory service to assist industrial firms to improve the efficiency of their operation in terms of plant layout, material utilization, etc.
4. There is a need to promote cooperation between international scientific unions and industry in providing training and guidance to LDCs in the management of science and technology, particularly for agro-based industries.



5. There is a need to "institutionalize" or coordinate the global involvement and contribution of international scientific unions, private and para-statal agro-industries in development.  
Cooperative effort could be directed to:
  - (a) the identification and application of simple appropriate technologies for the benefit of rural communities;
  - (b) to redesign professional training programs so as to include a practical training component either in a research institute or agro-industry.
6. There is a need to provide effective information networks for the use of government planners, industrial enterprises and research workers, organized to disseminate information on technological opportunities relevant to national interests and problems of development.
7. There is a need to acquire a greater scientific understanding and technical control over traditional agricultural and food processing technologies and to compare them in terms of economic, technical and social effectiveness with new so-called appropriate technologies imported from elsewhere.